REMARKS

The Applicant is filing this Preliminary Amendment as the submission required by 37 C.F.R. § 1.114 accompanying a Request for Continued Examination. A Final Office Action was issued on December 19, 2006. At the time of the Official Action, claims 18 and 26-47 were pending. In this Response and Amendment, no claims are canceled or added. Accordingly, claims 18 and 26-47 remain currently pending. Claims 18, 26 and 37 are amended.

In the Office Action, claims 18, 26-47 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Also, claims 18, 26-47 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 18, 26-28, 30-32, 35-39, 41-43, 46, and 47 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,410,722 to Cornaby ("the Cornaby reference"), in view of U.S. Patent No. 6,490,666 to Cabrera et al. ("the Cabrera reference"). Also, in the Office Action, claims 29 and 40 were rejected under 35 U.S.C. § 103(a) as being obvious over Cornaby in view of Cabrera and further in view of Douceur et al., Patent No. 6,041,053. Claims 35 and 46 were rejected under 35 U.S.C. § 103(a) as being obvious over Cornaby in view of Cabrera and further in view of Peterson et al., Patent Publication No. 2006/0010420. Further, claims 36 and 47 were rejected under 35 U.S.C. § 103(a) as being obvious over Cornaby in view of Cabrera and further in view of Fischer et al., Patent Publication No. 2002/0163932. Similarly, claims 33, 34, 44, and 45 were rejected under 35 U.S.C. § 103(a) as being obvious over Cornaby in view of Cabrera and further in view of Johnson et al., Patent No. 5,133,053. Each of these rejections is addressed in detail below.

The Rejection Under 35 U.S.C § 101

With respect to the Examiner's rejection of claims 18 and 26-47 under Section 101 as being directed to non-statutory subject matter, the Examiner stated that:

> Independent claims 18,26, and 37 are rejected under 35 U.S.C. 101 because The claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within, a statutory category. They are, at best, functional descriptive material *per se*.
>
> Any dependent claims which depend on said independent claims 18, 26, and 37, I are hereby rejected under 35 U.S.C. 101 because of their dependency on said independent claims.

> Office Action, page 3.

The Applicant respectfully traverses this rejection.

Legal Precedent

According to the Supreme Court, congress intended statutory subject matter to "include anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09; 206 U.S.P.Q. 193, 197 (1980). Indeed, exclusions of statutory subject matter are limited to laws of nature, natural phenomena and abstract ideas. *See Diamond v. Diehr*, 450 U.S. 175, 185; 209 U.S.P.Q. 1, 7 (1981). Other than these specific exceptions, therefore, nearly anything man made is statutorily patentable subject matter under 35 U.S.C. §101.

In determining when process or method claims include statutory subject matter, the Supreme Court in *Diehr* stated that "[t]ransformation and reduction of an article 'to a

different state or thing' is the clue to the patentability of a process claim that does not include particular machines." *See id.* 450 U.S. at 183-185, 209 U.S.P.Q. at 6. In addition to the Supreme Court's transformation and reduction test, the Federal Circuit has developed a second test which may also be used to determine if a claim recites statutory subject matter, namely does the claim produce a "useful, concrete, and tangible result." *In re Alappat*, 31 U.S.P.Q.2d 1545, 1557 (Fed. Cir. 1994) *(en banc)*. The Federal Circuit further elaborated on this second test by holding that one must look to "the essential characteristics of the subject matter, in particular, its practical utility." *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 47 U.S.P.Q.2d 1596, 1602 (Fed. Cir. 1998).

However, explaining this "useful, concrete, and tangible" test, the Federal Circuit has stated "the dispositive inquiry is whether the claim *as a whole* is directed to statutory subject matter." *In re Alappat*, 31 U.S.P.Q.2d at 1557. Indeed, there has been no requirement from Congress, the Supreme Court, or the Federal Circuit mandating that a *specific final result* be shown for a claim to qualify under Section 101. *See id.* Rather, the Federal Circuit has specifically stated "the *Alappat* inquiry simply requires an examination of the contested claims to see if the claimed subject matter *as a whole* is a disembodied mathematical concept representing nothing more than a 'law of nature' or an 'abstract idea,' or if the mathematical concept has been reduced to *some practical application rendering it 'useful'*." *AT&T Corp. v. Excel Communications, Inc.*, 50 U.S.P.Q.2d 1447, 1451 (Fed. Cir. 1999) (emphasis added). Therefore, if a claim meets either the transformation and reduction test put forth by the Supreme Court, or if the claim, read as a whole and in light of the specification, produces any useful, concrete, and tangible result, the claim meets the statutory requirements of Section 101. *See id.*

Applicant respectfully asserts that the independent claims 18, 26 and 37 taken as a whole, each recite statutory subject matter under 35 U.S.C. §101 because they produce a useful, concrete and tangible result. The present Application is directed to methods and systems for managing heterogeneous data structures of a particular application using queue headers. Particularly, the present application is aimed at providing a system configured to simplify tasks performed by software developers and/or users when managing data structures. As stated in the specification:

> Currently, the queue code is application specific because queue link information is embedded and interlocked within each data structure of the particular application. The queue link information often includes a pointer to a next queue node and a pointer to a previous queue node. The embedding and interlocking of the queue link information into the data structure requires the software developer or user to manage not only the data structures but also the associated queue link information, which is a complicated undertaking.

> Application, page 2, lines 11-20.

For example, independent claim 18 recites a method for managing a queue having a plurality of queue headers within a computer system. The method includes attaching a plurality of data structures to the plurality of queue headers, and controlling operations of the plurality of queue headers utilizing "a *function library containing* a plurality of queue function calls, wherein the function calls are configured to *manage the plurality of queue headers* operating on the data structures." Independent claims 26 and 37 recite similar subject matter.

Claims 18, 26 and 37 therefore, taken as a whole, recite either a method for managing a plurality of queue headers using a function library containing function calls so that the user and/or software developer can effectively manage the queue headers without modifying and

debugging the queue headers every time another application is called upon to be performed. *See*, Application, page 11, lines 6-13. Such a method greatly simplifies the task undertaken by the user in managing data structures. This is clearly a useful, concrete and tangible result which addresses the above mentioned shortcomings related to managing data structures using queue headers. Accordingly, Applicant respectfully requests withdrawal of the rejection of independent claims 18, 26 and 37, as well those claims dependent therefrom.

Claim Rejections under 35 U.S.C. § 112, Second Paragraph

With respect to the rejection of claims 18 and 26-47 under U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention, the Examiner stated that the limitation "the data structure of a computer system" has "insufficient antecedent basis." Office Action, page 4. While not conceding to the correctness of the rejection, Applicant has nonetheless amended claims 18, 26 and 37 to recite "the data structures" to overcome the rejection and advance prosecution of the present case. The recited data structures find clear antecedent basis in the preceding recitation of "a plurality of data structures." Accordingly, the Applicant requests withdrawal of the rejection of claims 18, 26 and 37 and the claims dependent thereon under Section 112, second paragraph.

The Rejections Under 35 U.S.C. § 103

With respect to the rejection of claims 18, 26-28, 30-32, 35-39, 41-43, 46, and 47 under 35 U.S.C. § 103(a) as being obvious over the Cornaby in view of the Cabrera reference, the rejection of independent claim 18 is exemplary:

As per claim 18, Cornaby teaches the limitations:

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"A method for managing a queue having a plurality of queue headers within a computer system comprising the steps of:" (Figure 2 to Figure 3L)

"attaching a plurality of data structures to the plurality of queue headers, where each data structure is attached to one of the plurality of queue headers" (Figure 2-3L which shows a plurality of queue headers wherein each queue header includes a data structure; Column 3 Line 64 through Column 4 Line 1, i.e., FIG. 2 is a configuration consisting of four queues, 20, 21, 22, and 23, within the queue system for the purpose of explaining the preferred embodiment of the queue system. The configuration is comprised of queue 023 which acts as the empty queue and which initially will contain all the task registers in the queue system; Note that task registers are data structures attached to queue headers; and Column 4 Lines 60-64, i.e., In view of, for simplicity in describing the invention, the task register in queues A 20, 827, and 023 are addressed ordered within the queue and the task registers in queue C23 are ordered in the sequence of insertion into the queue); and

"controlling operations of the plurality of queue headers utilizing one of a plurality of queue function calls" (Figure 2-3L; and Column 4 Lines 2-5, i.e., When the processor 70 receives a task to be performed by using the queue system, the task is assigned to the task register having the lowest address in queue D23).

Cornaby does not explicitly teach the limitation: "wherein the function calls are configured to search the data structure of the computer system".

On the other hand, Cabrera teaches the limitation:

"wherein the function calls are configured to search the data structure of the computer system" (Figure 3: Headers 302 to 370 and Data Buffers 312 to 320; Column 2 Line 65 to Column 3 Line 5, i.e., Buffer management structures, such as buffer headers and hash queue headers, are used to optimize performance of insert, search, and data buffer use operations. Buffer headers managed in a least-recently-used queue in accordance with a relative availability status. Buffer headers are also organized in hash queue structures in accordance with file-based identifiers to facilitate searching for requested data in the data buffer; and Column 3 Line 52-62, i.e., Buffer headers are also allocated to facilitate management of the data buffer. The buffer headers are organized in a least-recently-used (LRU) queue based on a relative availability status to coordinate the reuse of data buffers. The buffer headers are also organized in hash queue structure to optimize performance of insert and search operations. When a no recall request for data from a file recorded on a secondary storage device is received in association with a file-based identifier, the data buffers are

searched first before an attempt to retrieve the data from the secondary device).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method of Cornaby, which teaches queue headers which are utilized to make function calls and to which data structures are attached, with the method of Cabrera, which teaches searchable queued, buffers so that, in the combined method, function calls are used to search the data structures which are attached to queue headers. One would have been motivated to, do so in order to optimize search by reducing the number of searches (Cabrera, Column 2 Lines 48-51).

Office Action, pages 5-7.

Legal Precedent

The Applicant respectfully traverses the rejection. The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Moreover, the Examiner must show that the proffered combination includes *all* of the claimed elements, as well as a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

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In the present case, the rejection of independent claims 18, 26 and 37 under Section 103 as being obvious over the Cornaby reference in view of the Cabrera reference is improper because the Cornaby reference, the Cabrera reference or their hypothetical combination do not disclose each and every element recited by the claims. Specifically, independent claim 18 recites "[a] method for managing a queue having a plurality of queue headers." Further, the method comprises the acts of "attaching a plurality of *data structures* to the plurality of queue headers" and "controlling operations of the plurality of queue headers utilizing *a function call library containing a plurality of queue function calls*, wherein the functions *calls are configured to manage* the plurality of queue headers operating on the data structures." (Emphasis added). Similarly, independent claims 26 and 37 recite a system and method, respectively, such that the "plurality of queue headers are controlled by *a function call library* containing a plurality of function calls *configured to manage* the plurality of queue headers operating on the data structures." (Emphasis added).

First, Applicant submits that the Cornaby reference simply does not disclose function calls, much less a function call library. Moreover, Cornaby does not even contain the terms "function call" or "function call library." In rejecting the claims with regard to the function call, the Examiner relied on a portion of the Cornaby reference, as disclosing a function call, stating that:

> [w]hen processor 10 receives a task to be performed by using
> the queue system, the task is assigned to the task register having
> the lowest address in queue D 23.

Office Action, page 6 and Cornaby, col. 4, lines 2-4.

The above disclosure describes the operation of a processor when receiving a task, however, there is no teaching, suggestion or illustration in the Carnaby reference of function calls, much less a function call library from which the functions may be called to control and/or

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manage the queue headers operating on the data structures. Because Cornaby does not disclose function calls or function call libraries, Cornaby cannot disclose or suggest that queue headers are controlled by a function call library containing a plurality of function calls *configured to manage* the plurality of queue headers operating on the data structures, as recited by independent claims 18, 26 and 37.

Further, Applicant respectfully submits that the Examiner has erroneously interpreted data associated with queue header and task register data as disclosed by the Cornaby reference to be the data structures recited by independent claims 18, 26 and 37. *See* Cornaby, Figs, 3A-3L and Final Office Action, page 5. Applicant submits that data taught by the Cornaby reference is not properly equated to the data structures recited by the claims because the claimed data structures are not part of a task register. Consequently, the system taught by the Cornaby reference is not configured to search these data structures.

The Cabrera reference does not cure the deficiencies of Cornaby because it, too, lacks any teaching, suggestion or illustration of a function call library, function calls or using the function calls to control and/or manage a plurality of queue headers operating on data structures. Indeed, like Cornaby, Cabrera does not even contain the terms "function call" or "function call library." Moreover, Cabrera does not disclose function calls configured to manage the plurality of queue headers operating on the data structures, as recited by the Applicant's independent claims. Because neither Cornaby nor Cabrera discloses the use of a function call library or a function call, the combination of Cornaby and Cabrera cannot render Applicant's claims obvious under Section 103. Accordingly, Applicant respectfully requests withdrawal of the rejection of independent claims 18, 26 and 37 and the rejected dependent claims under Section 103 based on Cornaby in view of Cabrera.

Neither Cornaby nor Cabrera discloses the subject matter of dependent claims 28 and 39

Aside from being dependent on an allowable base claim, the rejection of dependent claims 28 and 39 is improper because the prior art references that are used to reject the claims does not disclose each an every element recited by claims 28 and 39. Particularly, dependent claims 28 and 39 recite a plurality of function calls that include "an insert call, a remove call, a search and remove call, a search and insert call, a search only call and a peek call." Applicant submits that the above recited elements are not disclosed in either the Cornaby reference or the Cabrera reference. As set forth above, neither Cornaby nor Cabrera discloses function call libraries or function calls. Thus, neither can disclose the specific types of function calls recited in dependent claims 28 and 39. Applicant respectfully requests withdrawal of the rejection of dependent claims 28 and 39 for these additional reasons.

Rejections of other dependent claims under Section 103

The Examiner rejected claims 29, 33-36, 40, 44, 45 and 47, each depending from allowable base clams 26 and 37, under 35 U.S.C. § 103(a) as obvious over the Cornaby reference in view of the Cabrera reference, and further in view of the above-mentioned multiple secondary references. Applicant respectfully traverses these rejections. Applicant respectfully submits that claims 29, 33-36, 40, 44, 45 and 47 are allowable based on their dependencies on independent claims 26 and 37, because the other secondary references do not cure the deficiencies described above in regard to the Cornaby reference. Moreover, the Examiner does not even allege that the deficiencies of Cornaby and Cabrera are cured by the secondary references. For at least these reasons, Applicant respectfully asserts that the Examiner has clearly not established a *prima facie* case of obviousness with regard to claims
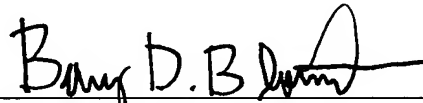
29, 33-36, 40, 44, 45 and 47. Accordingly, Applicant respectfully requests that the Examiner

withdraw the rejections under Section 103 and allow claims 29, 33-36, 40, 44, 45 and 47.

Conclusion

In view of the remarks set forth above, the Applicant respectfully requests

reconsideration of the Examiner's rejections and allowance of all pending claims 18 and 26-

47. If the Examiner believes that a telephonic interview will help speed this application

toward issuance, the Examiner is invited to contact the undersigned at the telephone number

listed below.

Respectfully submitted,

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